WEST Search History

DATE: Sunday, November 02, 2003

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,PGPB,JPAB,EPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ			
L7	L6 and cetane	5	L7
L6	L5 and cobalt	9	L6
L5	L3 and (carbon support$3 or carbon near1 support$3)	9	L5
L4	L3 and (carbon support or carbon near1 support)	8	L4
L3	L2 and (synthesis gas or carbon monoxide near1 hydrogen)	557	L3
L2	L1 and fischer near1 tropsch	744	L2
L1	diesel fuel or diesel distillate	16083	L1

END OF SEARCH HISTORY

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

FILE COVERS 1907 - 2 Nov 2003 VOL 139 ISS 19
FILE LAST UPDATED: 31 Oct 2003 (20031031/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

```
=> s diesel fuel or diesel distillate
         37616 DIESEL
           408 DIESELS
         37664 DIESEL
                 (DIESEL OR DIESELS)
        322317 FUEL
        150555 FUELS
        369966 FUEL
                 (FUEL OR FUELS)
         16961 DIESEL FUEL
                 (DIESEL(W)FUEL)
         37616 DIESEL
           408 DIESELS
         37664 DIESEL
                 (DIESEL OR DIESELS)
         39703 DISTILLATE
         13870 DISTILLATES
         47825 DISTILLATE
                 (DISTILLATE OR DISTILLATES)
            78 DIESEL DISTILLATE
                 (DIESEL(W)DISTILLATE)
L1       16982 DIESEL FUEL OR DIESEL DISTILLATE

=> s l1 and Fischer tropsch
         20971 FISCHER
            26 FISCHERS
         20982 FISCHER
                 (FISCHER OR FISCHERS)
          6594 TROPSCH
          6478 FISCHER TROPSCH
                 (FISCHER(W)TROPSCH)
L2         326 L1 AND FISCHER TROPSCH

=> s l2 and (synthesis gas or hydrogen (1a)carbon monoxide)
       1089360 SYNTHESIS
             2 SYNTHESISES
         60253 SYNTHESES
       1123625 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
       1326106 GAS
        458873 GASES
       1491450 GAS
                 (GAS OR GASES)
```

```
          13871 SYNTHESIS GAS
                (SYNTHESIS(W)GAS)
         795652 HYDROGEN
           5232 HYDROGENS
         798590 HYDROGEN
                (HYDROGEN OR HYDROGENS)
        1023434 CARBON
          22805 CARBONS
        1031738 CARBON
                (CARBON OR CARBONS)
         154460 MONOXIDE
            943 MONOXIDES
         154958 MONOXIDE
                (MONOXIDE OR MONOXIDES)
         130447 CARBON MONOXIDE
                (CARBON(W)MONOXIDE)
           9050 HYDROGEN (1A)CARBON MONOXIDE
L3           99 L2 AND (SYNTHESIS GAS OR HYDROGEN (1A)CARBON MONOXIDE)

=> s l3 and carbon (2a) support
        1023434 CARBON
          22805 CARBONS
        1031738 CARBON
                (CARBON OR CARBONS)
         370014 SUPPORT
         103439 SUPPORTS
         439579 SUPPORT
                (SUPPORT OR SUPPORTS)
           4078 CARBON (2A) SUPPORT
L4            1 L3 AND CARBON (2A) SUPPORT

=> s l3 and activated carbon
         418475 ACTIVATED
        1023434 CARBON
          22805 CARBONS
        1031738 CARBON
                (CARBON OR CARBONS)
          37762 ACTIVATED CARBON
                (ACTIVATED(W)CARBON)
L5            1 L3 AND ACTIVATED CARBON

=> s l4 or l5
L6            2 L4 OR L5

=> s l6 and cobalt
         326350 COBALT
             93 COBALTS
         326354 COBALT
                (COBALT OR COBALTS)
L7            2 L6 AND COBALT

=> d l7 ibib ab 1-2

L7   ANSWER 1 OF 2  CAPLUS  COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER:         2003:551193  CAPLUS
DOCUMENT NUMBER:          139:103471
TITLE:                    Process for direct synthesis of diesel
                          distillates with high quality from
                          synthesis gas through
                          Fischer-Tropsch synthesis
INVENTOR(S):              Ding, Yunjie; Ma, Wenping; Lu, Yuan; Lin, Liwu
PATENT ASSIGNEE(S):       Peop. Rep. China
SOURCE:                   U.S. Pat. Appl. Publ., 8 pp.
                          CODEN: USXXCO
```

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003134912	A1	20030717	US 2002-52485	20020117

PRIORITY APPLN. INFO.: US 2002-52485 20020117

AB **Diesel fuels** or blending stocks having excellent lubricity, oxidative stability and high cetane no. are directly produced from **synthesis gas** over **activated carbon** supported **cobalt** based **Fischer-Tropsch** catalyst under the condition of temp. within the range of 120.degree. to 400.degree., reaction pressure within the range of 0.5 to 10.0 MPa, vol. hourly space velocity of a mixt. of **hydrogen** and **carbon monoxide** within the range of 100 to 5000, the mole ratio of **hydrogen** to **carbon monoxide** within the range of 1 to 4. **Diesel fuels** contg. at least 95 wt.% paraffins with an iso to normal ratio of about 0.03 to 0.3, <50 ppm (wt.) of sulfur and nitrogen, less than about 2 wt.% unsaturates, and about 0.001 to less than 0.3 wt % oxygen were obtained by sepg. the **Fischer-Tropsch** product into a lighter (180.degree. to 245.degree. fraction) and heavier fractions (245.degree. to 380.degree. fraction) utilizing a rough flash, and combining the 180.degree. to 245.degree. portion of the lighter product with the 245.degree. to 380.degree. fraction in desired ratios.

L7 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 1985:424785 CAPLUS
DOCUMENT NUMBER: 103:24785
TITLE: Conversion of syngas to liquid motor fuels
INVENTOR(S): Rabo, Jule Anthony; Coughlin, Peter Kevin
PATENT ASSIGNEE(S): Union Carbide Corp. , USA
SOURCE: Eur. Pat. Appl., 54 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 140365	A1	19850508	EP 1984-113046	19841030
EP 140365	B1	19870819		
R: AT, BE, DE, FR, GB, IT, LU, NL, SE				
AT 29021	E	19870915	AT 1984-113046	19841030
AU 8434883	A1	19850509	AU 1984-34883	19841031
AU 577067	B2	19880915		
ZA 8408513	A	19850626	ZA 1984-8513	19841031
BR 8405576	A	19850910	BR 1984-5576	19841031
CA 1225982	A1	19870825	CA 1984-466715	19841031
US 4652538	A	19870324	US 1985-780259	19850926

PRIORITY APPLN. INFO.: US 1983-547668 19831101
EP 1984-113046 19841030

AB A **Fischer-Tropsch** catalyst on a cocatalyst-support (hydrophobic zeolite) was used for the conversion of syngas [60:30:10 H-CO-Ar (added as a tracer)] to motor-fuel range C5+ hydrocarbons. Thus, a catalyst contg. .apprx.15% Co was prepd. by pptg. CoO on a steam-activated ultrahydrophobic (UHP) zeolite Y by stirring Co nitrate, Na2CO3, and zeolite suspension in water, filtering, drying, and redn. at 300.degree.. The catalyst was used to convert 50.87% syngas (300 psig, 251-253.degree., .apprx.400 h-1 space velocity) to C5+ hydrocarbons at 77.99% selectivity.

```
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                   present
 NEWS  4  AUG 05   New pricing for EUROPATFULL and PCTFULL effective
                   August 1, 2003
 NEWS  5  AUG 13   Field Availability (/FA) field enhanced in BEILSTEIN
 NEWS  6  AUG 18   Data available for download as a PDF in RDISCLOSURE
 NEWS  7  AUG 18   Simultaneous left and right truncation added to PASCAL
 NEWS  8  AUG 18   FROSTI and KOSMET enhanced with Simultaneous Left and Righ
                   Truncation
 NEWS  9  AUG 18   Simultaneous left and right truncation added to ANABSTR
 NEWS 10  SEP 22   DIPPR file reloaded
 NEWS 11  SEP 25   INPADOC: Legal Status data to be reloaded
 NEWS 12  SEP 29   DISSABS now available on STN
 NEWS 13  OCT 10   PCTFULL: Two new display fields added
 NEWS 14  OCT 21   BIOSIS file reloaded and enhanced
 NEWS 15  OCT 28   BIOSIS file segment of TOXCENTER reloaded and enhanced

 NEWS EXPRESS  OCTOBER 01 CURRENT WINDOWS VERSION IS V6.01a, CURRENT
               MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
               AND CURRENT DISCOVER FILE IS DATED 23 SEPTEMBER 2003
 NEWS HOURS    STN Operating Hours Plus Help Desk Availability
 NEWS INTER    General Internet Information
 NEWS LOGIN    Welcome Banner and News Items
 NEWS PHONE    Direct Dial and Telecommunication Network Access to STN
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                                                       ENTRY    SESSION
FULL ESTIMATED COST                                     0.21       0.21

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NEWS 4	Feb 24	TEMA now available on STN
NEWS 5	Feb 26	NTIS now allows simultaneous left and right truncation
NEWS 6	Feb 26	PCTFULL now contains images
NEWS 7	Mar 04	SDI PACKAGE for monthly delivery of multifile SDI results
NEWS 8	Mar 24	PATDPAFULL now available on STN
NEWS 9	Mar 24	Additional information for trade-named substances without structures available in REGISTRY
NEWS 10	Apr 11	Display formats in DGENE enhanced
NEWS 11	Apr 14	MEDLINE Reload
NEWS 12	Apr 17	Polymer searching in REGISTRY enhanced
NEWS 13	SEP 09	CA/CAplus records now contain indexing from 1907 to the present
NEWS 14	Apr 21	New current-awareness alert (SDI) frequency in WPIDS/WPINDEX/WPIX
NEWS 15	Apr 28	RDISCLOSURE now available on STN
NEWS 16	May 05	Pharmacokinetic information and systematic chemical names added to PHAR
NEWS 17	May 15	MEDLINE file segment of TOXCENTER reloaded
NEWS 18	May 15	Supporter information for ENCOMPPAT and ENCOMPLIT updated
NEWS 19	May 19	Simultaneous left and right truncation added to WSCA
NEWS 20	May 19	RAPRA enhanced with new search field, simultaneous left and right truncation
NEWS 21	Jun 06	Simultaneous left and right truncation added to CBNB
NEWS 22	Jun 06	PASCAL enhanced with additional data
NEWS 23	Jun 20	2003 edition of the FSTA Thesaurus is now available
NEWS 24	Jun 25	HSDB has been reloaded
NEWS 25	Jul 16	Data from 1960-1976 added to RDISCLOSURE
NEWS 26	Jul 21	Identification of STN records implemented
NEWS 27	Jul 21	Polymer class term count added to REGISTRY
NEWS 28	Jul 22	INPADOC: Basic index (/BI) enhanced; Simultaneous Left and Right Truncation available
NEWS 29	AUG 05	New pricing for EUROPATFULL and PCTFULL effective August 1, 2003
NEWS 30	AUG 13	Field Availability (/FA) field enhanced in BEILSTEIN
NEWS 31	AUG 15	PATDPAFULL: one FREE connect hour, per account, in September 2003
NEWS 32	AUG 15	PCTGEN: one FREE connect hour, per account, in September 2003
NEWS 33	AUG 15	RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS 34	AUG 15	TEMA: one FREE connect hour, per account, in September 2003
NEWS 35	AUG 18	Data available for download as a PDF in RDISCLOSURE
NEWS 36	AUG 18	Simultaneous left and right truncation added to PASCAL
NEWS 37	AUG 18	FROSTI and KOSMET enhanced with Simultaneous Left and Right Truncation

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 NEWS 38  AUG 18  Simultaneous left and right truncation added to ANABSTR

 NEWS EXPRESS  April 4 CURRENT WINDOWS VERSION IS V6.01a, CURRENT
               MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
               AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003
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FILE 'HOME' ENTERED AT 10:24:11 ON 14 SEP 2003

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                                                       ENTRY     SESSION
FULL ESTIMATED COST                                     1.26        1.26

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FILE COVERS 1907 - 14 Sep 2003  VOL 139 ISS 12
FILE LAST UPDATED: 12 Sep 2003  (20030912/ED)

  This file contains CAS Registry Numbers for easy and accurate
  substance identification.

=> s synthesis gas or (carbon monoxide (1a) hydrogen)
      1082174 SYNTHESIS
            3 SYNTHESISES
        59967 SYNTHESES
      1116309 SYNTHESIS
                (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
      1318368 GAS
       456711 GASES
      1483043 GAS
                (GAS OR GASES)
```

WEST Search History

DATE: Sunday, September 07, 2003

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,PGPB,JPAB,EPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ			
L14	direct synthesis with diesel	3	L14
L13	L11 and one-step	1	L13
L12	L11 and primary product near3 diesel	1	L12
L11	L10 and cobalt	50	L11
L10	L9 and synthesis gas	56	L10
L9	diesel fuel and activated carbon	397	L9
L8	L7 and activated carbon	0	L8
L7	direct near1 diesel fuel	26	L7
L6	L5 not l4	1	L6
L5	L3 and activated carbon and cobalt	3	L5
L4	L3 and direct synthesis	2	L4
L3	diesel distillate	48	L3
L2	direct near1 synthesis near2 diesel fuel	0	L2
DB=USPT,PGPB; THES=ASSIGNEE; PLUR=YES; OP=ADJ			
L1	one near1 step with diesel fuel	2	L1

END OF SEARCH HISTORY

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NEWS 32	AUG 15	PCTGEN: one FREE connect hour, per account, in September 2003
NEWS 33	AUG 15	RDISCLOSURE: one FREE connect hour, per account, in September 2003
NEWS 34	AUG 15	TEMA: one FREE connect hour, per account, in September 2003
NEWS 35	AUG 18	Data available for download as a PDF in RDISCLOSURE
NEWS 36	AUG 18	Simultaneous left and right truncation added to PASCAL
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```
 NEWS EXPRESS  April 4 CURRENT WINDOWS VERSION IS V6.01a, CURRENT
               MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
               AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003
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                                                         ENTRY    SESSION
FULL ESTIMATED COST                                       0.21       0.21

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FILE COVERS 1907 - 7 Sep 2003  VOL 139 ISS 11
FILE LAST UPDATED: 5 Sep 2003  (20030905/ED)

  This file contains CAS Registry Numbers for easy and accurate
  substance identification.


=> s direct synthesis (l) diesel fuel
        515742 DIRECT
          6046 DIRECTS
        521050 DIRECT
                 (DIRECT OR DIRECTS)
       1081199 SYNTHESIS
             3 SYNTHESISES
         59953 SYNTHESES
       1115331 SYNTHESIS
                 (SYNTHESIS OR SYNTHESISES OR SYNTHESES)
          4069 DIRECT SYNTHESIS
```

```
              (DIRECT(W)SYNTHESIS)
          37135 DIESEL
            407 DIESELS
          37185 DIESEL
                (DIESEL OR DIESELS)
         319774 FUEL
         149994 FUELS
         367284 FUEL
                (FUEL OR FUELS)
          16744 DIESEL FUEL
                (DIESEL(W)FUEL)
L1            4 DIRECT SYNTHESIS (L) DIESEL FUEL

=> d l1 ibib ab 1-4

L1   ANSWER 1 OF 4  CAPLUS  COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER:         2003:551193  CAPLUS
DOCUMENT NUMBER:          139:103471
TITLE:                    Process for direct synthesis of diesel distillates
                          with high quality from synthesis gas through
                          Fischer-Tropsch synthesis
INVENTOR(S):              Ding, Yunjie; Ma, Wenping; Lu, Yuan; Lin, Liwu
PATENT ASSIGNEE(S):       Peop. Rep. China
SOURCE:                   U.S. Pat. Appl. Publ., 8 pp.
                          CODEN: USXXCO
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE           APPLICATION NO.   DATE
     ---------------   ----  --------       ---------------   --------
     US 2003134912      A1   20030717       US 2002-52485     20020117
PRIORITY APPLN. INFO.:                   US 2002-52485       20020117
AB   Diesel fuels or blending stocks having excellent lubricity, oxidative
     stability and high cetane no. are directly produced from synthesis gas
     over activated carbon supported cobalt based Fischer-Tropsch catalyst
     under the condition of temp. within the range of 120.degree. to
     400.degree., reaction pressure within the range of 0.5 to 10.0 MPa, vol.
     hourly space velocity of a mixt. of hydrogen and carbon monoxide within
     the range of 100 to 5000, the mole ratio of hydrogen to carbon monoxide
     within the range of 1 to 4.  Diesel fuels contg. at least 95 wt.%
     paraffins with an iso to normal ratio of about 0.03 to 0.3, <50 ppm (wt.)
     of sulfur and nitrogen, less than about 2 wt.% unsaturates, and about
     0.001 to less than 0.3 wt % oxygen were obtained by sepg. the
     Fischer-Tropsch product into a lighter (180.degree. to 245.degree.
     fraction) and heavier fractions (245.degree. to 380.degree. fraction)
     utilizing a rough flash, and combining the 180.degree. to 245.degree.
     portion of the lighter product with the 245.degree. to 380.degree.
     fraction in desired ratios.

L1   ANSWER 2 OF 4  CAPLUS  COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER:         2002:274070  CAPLUS
DOCUMENT NUMBER:          137:172057
TITLE:                    Development of dimethyl ether synthesis technology and
                          its diesel engine test
AUTHOR(S):                Ohno, Yotaro; Ogawa, Takashi; Shikada, Tsutomu;
                          Hayashi, Hiromasa
CORPORATE SOURCE:         NKK Corporation, Tokyo, 100-8202, Japan
SOURCE:                   Catalysts in Petroleum Refining and Petrochemicals,
                          Proceedings [of the] Annual Saudi-Japanese Symposium,
                          10th, Dhahran, Saudi Arabia, Nov. 19-20, 2000 (2000),
```

Meeting Date 2000, 128-137. King Fahd University of Petroleum & Minerals: Dhahran, Saudi Arabia.
CODEN: 69CLNP
DOCUMENT TYPE: Conference
LANGUAGE: English
AB Di-Me Ether(DME) is a clean and economical alternative fuel with properties similar to **diesel fuel**, and which can be produced from various resources as natural gas, coal or biomass through synthesis gas. A combustion test of DME with a four cylinder DI diesel engine of 3600 cc and a running test using a light truck with the same type of engine were carried out. No soot is emitted at any conditions and Nox is reduced, while DME consumption is same by calorie as that of **diesel fuel**. An innovative process of **direct synthesis** of DME from synthesis gas has been developed. A newly developed catalyst in a slurry phase reactor gave a high conversion and high selectivity of DME. Pilot scale plant (5 tons/day) testing has successfully started in 1999 with the Japanese government support. A feasibility study of DME Fuel System, which includes prodn. of DME from natural gas and its transportation to Japan, indicates that DME is economically competitive to conventional fuels.
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 2000:90340 CAPLUS
DOCUMENT NUMBER: 132:336791
TITLE: Direct dimethyl ether synthesis from hydrogen and carbon monoxide
AUTHOR(S): Ogawa, Takashi; Ono, Masami; Okuyama, Keiichi; Aoki, Seiji; Tomura, Keiji; Shikada, Tsutomu; Inoue, Norio; Ohno, Yotaro
CORPORATE SOURCE: Environmental Plant System Lab, Kawasaki Research Center, Japan
SOURCE: NKK Technical Review (1999), 81, 13-17
CODEN: NTERED; ISSN: 0915-0544
PUBLISHER: NKK Corp., Intellectual Property Dep.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB DME (di-Me ether) is a clean and easy-to-use fuel that is similar to clean and environmentally-friendly LPG. DME is also known as a new clean **diesel fuel** that generates no soot. NKK developed a valuable new technol. for the **direct synthesis** of DME from carbon monoxide and hydrogen. This technol. coverts coal, coal bed methane or natural gas to the nontoxic, gas-liq. fuel.
REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L1 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 1999:585036 CAPLUS
DOCUMENT NUMBER: 131:259679
TITLE: Increase of the cetane number of diesel fuel
AUTHOR(S): Kotowski, Wlodzimierz; Fechner, Wolfgang
CORPORATE SOURCE: Instytut Ciezkiej Syntezy Organicznej w Kedzierzynie-Kozlu, Politechnika Opolska Opole, Opole, Pol.
SOURCE: Gospodarka Paliwami i Energia (1999), 47(6), 8-10
CODEN: GPENAS; ISSN: 0017-2413
PUBLISHER: Wydawnictwo SIGMA-NOT
DOCUMENT TYPE: Journal
LANGUAGE: Polish
AB Di-Me ether boosts the cetane no. of **diesel fuel** from approx. 50 to 104 and decreases nitrogen oxide emissions by 22.4 vol.%.

It can be produced by ether **direct synthesis** from synthesis gas or by methanol dehydration.

RECEIVED 740	No. _____ for following:	☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

WEST Search History

DATE: Sunday, November 02, 2003

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,PGPB,JPAB,EPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ			
L61	l60 and activated carbon	2	L61
L60	L59 and (oxygenate or oxygen)	37	L60
L59	L58 and paraffins	41	L59
L58	L57 and sulfur and nitrogen	41	L58
L57	L56 and space velocity	44	L57
L56	L55 and cetane number	68	L56
L55	L3 and cobalt	463	L55
L54	one step synthesis near3 diesel fuel	0	L54
L53	L52 and (activated carbon or carbon near1 support)	0	L53
L52	6274029.pn.	2	L52
L51	L50 and (activated carbon or carbon near1 support)	0	L51
L50	5689031.pn.	2	L50
L49	L48 and (activated carbon or carbon near1 support)	0	L49
L48	5522983.pn.	2	L48
L47	L46 and (activated carbon or carbon near1 support)	0	L47
L46	5378348.pn.	2	L46
L45	L44 and (activated carbon or carbon near1 support)	0	L45
L44	5324335.pn.	2	L44
L43	l41 and (activated carbon or carbon near1 support)	0	L43
L42	l41 and diesel	1	L42
L41	4992406.pn.	2	L41
L40	L39 and (activated carbon or carbon near1 support)	0	L40
L39	4992159.pn.	2	L39
L38	L37 and (activated carbon or carbon near1 support)	0	L38
L37	4579986.pn.	2	L37
L36	L34 and carbon support	0	L36
L35	L34 and activated carbon	0	L35
L34	4542122.pn.	2	L34
L33	L32 and (diesel fuel or diesel distillate)	0	L33
L32	L31 and activated carbon	1	L32
L31	4478954.pn.	2	L31

L30	direct synthesis near3 diesel fuel	0	L30
L29	L28 and fischer tropsch	5	L29
L28	activated carbon support	371	L28
L27	L26 not l6	11	L27
L26	L25 and fischer tropsch	15	L26
L25	L24 and (diesel fuel or diesel distillate)	64	L25
L24	support with activated carbon	2491	L24
L23	L22 not l6	1	L23
L22	L21 and (disel fuel or diesel distillate)	5	L22
L21	fischer tropsch and activated carbon	262	L21
L20	L19 and fischer	5	L20
L19	carbon supported cobalt	12	L19
L18	L17 and support	2	L18
L17	4617320.pn.	2	L17
L16	l13 not l6	15	L16
L15	direct synthesis near3 diesel distillate	2	L15
L14	direct synthesis near3 diesel fuel	0	L14
L13	L12 and space velocity	18	L13
L12	L11 and (oxygen or oxygenate)	48	L12
L11	L10 and sulfur and nitrogen	52	L11
L10	L9 and cetane	58	L10
L9	L8 and cobalt	226	L9
L8	l3 and support$3 with carbon	236	L8
L7	L6 and cetane	5	L7
L6	L5 and cobalt	9	L6
L5	L3 and (carbon support$3 or carbon near1 support$3)	9	L5
L4	L3 and (carbon support or carbon near1 support)	8	L4
L3	L2 and (synthesis gas or carbon monoxide near1 hydrogen)	557	L3
L2	L1 and fischer near1 tropsch	744	L2
L1	diesel fuel or diesel distillate	16083	L1

END OF SEARCH HISTORY

WEST

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L27: Entry 8 of 11 File: USPT Jul 17, 1984

DOCUMENT-IDENTIFIER: US 4460710 A
TITLE: Catalytic method for synthesizing hydrocarbons

Brief Summary Text (2):
This invention relates to the synthesis of hydrocarbons by the reaction of carbon monoxide and hydrogen in the presence of a catalyst, commonly known as the Fischer-Tropsch synthesis. More particularly, this invention relates to novel catalysts for use in such process, methods for preparation of such catalysts, and methods for use of such catalysts.

Brief Summary Text (4):
The so-called Fischer-Tropsch synthesis wherein liquid aliphatic hydrocarbons, alcohols and minor amounts of aldehydes, fatty acids and ketones are produced by the hydrogenation of carbon monoxide has been known for about 60 years. Initially, alkalized iron turnings were utilized as the catalytic material. Typical effective catalysts are supported cobalt-thoria or supported iron catalysts. The reaction temperature is about 250.degree.-300.degree. C. and pressures range from 1 atm. to about 20 atm. A large commercial plant using iron catalysts is in operation in South Africa. Additionally, various methods for conducting the specific contacting of the reactants with one another and the catalytic material have been utilized, e.g. fixed bed, fluidized bed, etc. A thorough discussion of the chemistry of this immensely important reaction is set forth in "The Fischer-Tropsch and Related Syntheses" by Henry H. Storch, Norma Golumbic, Robert B. Anderson, published by John Wiley & Sons, New York, 1951.

Brief Summary Text (5):
Numerous attempts have been made to refine this synthesis in terms of improved effectiveness of the catalyst, product yield, improved production of more desirable product fractions, control of the product distribution, etc. Additionally, efforts have been made to achieve more stable catalysts. As a general rule, the materials which have been known to be effective as Fischer-Tropsch catalysts are extremely sensitive to air and moisture and consequently, must be used either shortly after preparation or prepared in situ.

Brief Summary Text (8):
We have discovered a novel catalytic material which can be used for the synthesis of hydrocarbons from carbon monoxide and hydrogen. This catalytic material is unique in both its physiochemical constitution as well as the properties which it exhibits. Thus, the catalytic composition of the present invention exhibits superior activity as compared to conventional Fischer-Tropsch type catalysts. In addition, such activity can be obtained in dilute slurry form which substantially improves the heat transfer factors involved in the Fischer-Tropsch synthesis. Furthermore, the catalytic composition of the present invention exhibits superior stability and can be stored for long periods of time in either a dry or slurry form. Finally, the catalytic composition of the present invention produces a very desirable product composed of a fraction of linear hydrocarbons ranging from C.sub.1 to C.sub.40 with a low degree of branching.

Brief Summary Text (10):
The method and use of the present invention is also unique as compared with conventional Fischer-Tropsch catalysts. Of great importance is the fact that this catalyst can be used in dilute slurry form and with dilute concentrations of gaseous

reactants to obtain high yields of desirable product fractions. This avoids the heat transfer problems commonly encountered with alternative contacting systems.

Brief Summary Text (11):
More particularly, the catalyst composition of the present invention is composed of palladium or platinum and cobalt supported on a solid phase. The solid phase material, commonly referred to as a support or carrier, may be chosen from any appropriate material such as: talc; dolomite; limestone; clay; activated carbon; zeolite; pumice; the oxides, hydroxides or carbonates of aluminum, silicon, zinc, chromium, magnesium, calcium, titanium, or zirconium; alumina; silica gel; kieselguhr; barium sulfate; or any inert material. This catalyst produces improved yields significantly greater than conventionally known systems. Additionally, the catalyst is able to operate effectively under wider ranges of pressure and temperature than the previously known catalysts and can also operate effectively under dilute feed gas conditions, that is in the presence of synthesis gas diluents or impurities such as nitrogen, so long as the ranges of carbon monoxide and hydrogen are within the ranges set forth below.

Drawing Description Text (8):
FIG. 7 is a gas chromatographic analysis of diesel fuel.

Detailed Description Text (24):
Of particular importance is the fact that despite the wide range of pressures and temperatures which can be used as well as the diluteness of the gaseous feed streams, the product obtained is composed of highly desirable fractions of hydrocarbons. Typically, for example, the product obtained with the present invention would have an analysis as shown by gas phase chromatography exemplified in FIG. 6. The distribution for diesel fuel is shown in FIG. 7. In particular, analysis of typical reaction products indicates a broad distribution of C.sub.1 to C.sub.40 paraffins. Only small amounts of C.sub.1 -C.sub.5 alcohols have been detected with the catalyst of the invention. For example, a reaction employing 3 g of the present catalyst in 100 ml of xylene carried out under three separate synthesis gas chargings yielded a light yellow solution and water. The xylene was distilled under vacuum, a yellow oil resulted. Infrared analysis of the reaction solution and oil indicated only a small amount of oxygenated product and olefins and no metal carbonyl. Integrated nuclear magnetic resonance spectra of the yellow oil, shown in FIG. 8, indicated highly linear paraffinic products of an average chain length of 18 with little or no aromatics, unsaturates, oxygenates or branched products. Gas phase analysis of the gaseous components from the cooled reactor, as determined by gas-solid chromatography employing a thermal conductivity detector, indicated methane (generally less than 10 weight percent of hydrocarbon in the product), ethane, propane, butane, and only small amounts of unsaturated hydrocarbons.

Detailed Description Text (25):
An additional experiment was carried out to determine the efficacy of the catalyst in accordance with the present invention in dilute synthesis gas feed conditions. In particular, a catalyst was prepared from 3.4 grams of dicobalt octacarbonyl and 1.0 grams 5% palladium on alumina in cyclohexane under 400 psi of nitrogen and 1200 psi of hydrogen. The reactor was heated to about 180.degree. C. However, no pressure drop was observed. On cooling the reactor, ammonia could not be detected in either the gas or liquid phases. Upon venting the gases and recharging with 500 psi of nitrogen and 500 psi of synthesis gas (2 H.sub.2 :1 CO) and thereafter heating, the catalyst exhibited normal activity for hydrocarbon synthesis. This is to be contrasted with ordinary Fischer-Tropsch catalysts which show a marked decrease in activity in the presence of a diluent.

Detailed Description Text (26):
That the catalyst of the present invention is substantially more reactive than conventionally known Fischer-Tropsch catalysts is shown in Table 1.

Detailed Description Text (27):
Table 1 shows rate comparisons of a number of conventional Fischer-Tropsch catalysts with catalysts of the present invention under isothermal conditions. The activity of the present catalysts as expressed in conversions per catalytic volume per unit time or of conversions per mole of metal atoms per unit time are superior by about two orders of magnitude as compared to those catalysts studied by the Bureau of Mines.

Detailed Description Text (28):
Of particular interest is the fact that the conventional catalysts for hydrocarbon synthesis are generally used at about atmospheric pressure. In contrast, the catalysts of the present invention have their best activity at pressures between about 300 to 500 psi. An experiment utilizing a conventional Fischer-Tropsch catalyst, such as, 100 Co : 18 ThO.sub.2 : 100 kieselguhr, under comparable conditions to those used with the present catalyst (cyclohexane slurry, 225.degree. C., 1200 psi cold synthesis gas pressure), show that the rate of gas consumption was more than 10 times faster with the present catalyst, while the product of the present catalyst contained less of the undesired oxygenates.

Detailed Description Paragraph Table (1):
TABLE 1 _____ REPRESENTATIVE HYDROCARBON PRODUCTION RATES OF FISCHER TROPSCH CATALYSTS Activity g prod. per Temperature Kg metal Catalyst .degree.C. per hour _____ Catalyst of Example 4 225.degree. 3000 Catalyst of Example 9 225.degree. 1080 Catalyst of the Present 125.degree. 40 Invention.sup.a Lurgi catalyst (10Fe:10Cu: 225.degree. 24 2K.sub.2 CO.sub.3 :9Al.sub.2 O.sub.3 :30SiO.sub.2).sup.b Brabag catalyst (100Fe:20Cu: 225.degree. 10 20Zn:1K.sub.2 CO.sub.3).sup.b Bureau of Mines 2A catalyst 195.degree. 50 (100Co:18ThO.sub.2 :100 kieselguhr).sup.c Pichler acid-promoted Ru/Al.sub.2 O.sub.3 120.degree. 120 catalyst for polymethylene.sup.d Kolbel slurry catalyst 268.degree. 450 (100Fe:0.1Cu:0.05K.sub.2 O).sup.e Vannice (5% Fe on glassy 235.degree. 4 carbon).sup.f _____ .sup.a 2.2 g catalyst, containing 1.2 g metal on low surface area (80-100 mesh) Al.sub.2 O.sub.3, 100 mL cyclohexane, 1200 psi charge 2.1 syngas, 300 mL AE reactor, catalyst prepared in situ. .sup.b H. H. Storch, N. Golumbic, and R. B. Anderson, The FischerTropsch and Related Syntheses, p. 308 (Table 86), Wiley, New York, 1951. .sup.c Ibid., p. 132 (Table 5). .sup.d H. Pichler and F. Bellstedt, Erdol u. Kohle 26, 560 (1973). .sup.e H. Kolbel, P. Ackermann, and F. Engelhardt, Erdol u. Kohle 9, 153, 225, 303 (1956). .sup.f M. A. Vannice, paper presented at 181st Am. Chem. Soc. Meet., Atlanta,. GA, March 29-April 3, 1981.

WEST Search History

DATE: Sunday, November 02, 2003

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT,PGPB,JPAB,EPAB,DWPI; THES=ASSIGNEE; PLUR=YES; OP=ADJ			
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L26	L25 and fischer tropsch	15	L26
L25	L24 and (diesel fuel or diesel distillate)	64	L25
L24	support with activated carbon	2491	L24
L23	L22 not l6	1	L23
L22	L21 and (disel fuel or diesel distillate)	5	L22
L21	fischer tropsch and activated carbon	262	L21
L20	L19 and fischer	5	L20
L19	carbon supported cobalt	12	L19
L18	L17 and support	2	L18
L17	4617320.pn.	2	L17
L16	l13 not l6	15	L16
L15	direct synthesis near3 diesel distillate	2	L15
L14	direct synthesis near3 diesel fuel	0	L14
L13	L12 and space velocity	18	L13
L12	L11 and (oxygen or oxygenate)	48	L12
L11	L10 and sulfur and nitrogen	52	L11
L10	L9 and cetane	58	L10
L9	L8 and cobalt	226	L9
L8	l3 and support$3 with carbon	236	L8
L7	L6 and cetane	5	L7
L6	L5 and cobalt	9	L6
L5	L3 and (carbon support$3 or carbon near1 support$3)	9	L5
L4	L3 and (carbon support or carbon near1 support)	8	L4
L3	L2 and (synthesis gas or carbon monoxide near1 hydrogen)	557	L3
L2	L1 and fischer near1 tropsch	744	L2
L1	diesel fuel or diesel distillate	16083	L1

END OF SEARCH HISTORY

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Search Results - Record(s) 1 through 5 of 5 returned.

☐ 1. Document ID: US 20030134912 A1

L7: Entry 1 of 5 File: PGPB Jul 17, 2003

PGPUB-DOCUMENT-NUMBER: 20030134912
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030134912 A1

TITLE: Process for direct synthesis of diesel distillates with high quality from synthesis gas through fischer-tropsch synthesis

PUBLICATION-DATE: July 17, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ding, Yunjie	Liaoning		CN	
Ma, Wenping	Liaoning		CN	
Lu, Yuan	Liaoning		CN	
Lin, Liwu	Liaoning		CN	

APPL-NO: 10/ 052485 [PALM]
DATE FILED: January 17, 2002

INT-CL: [07] B01 J 8/04, C07 C 27/06

US-CL-PUBLISHED: 518/715; 422/188
US-CL-CURRENT: 518/715; 422/188

REPRESENTATIVE-FIGURES: 1

ABSTRACT:

Diesel fuels or blending stocks having excellent lubricity, oxidative stability and high cetane number are directly produced from synthesis gas over activated carbon supported cobalt based Fischer-Tropsch catalyst under the condition of temperature within the range of 120 to 400.degree. C., reaction pressure within the range of 0.5 to 10.0 MPa, volume hourly space velocity of a mixture of hydrogen and carbon monoxide within the range of 100 to 5000, the mole ratio of hydrogen to carbon monoxide within the range of 1 to 4. Diesel fuels containing at least 95 wt % paraffins with an iso to normal ratio of about 0.03 to 0.3, <50 ppm (wt) of sulfur and nitrogen, less than about 2 wt % unsaturates, and about 0.001 to less than 0.3 wt % oxygen were obtained by separating the Fischer-Tropsch product into a lighter (180 to 245 .degree. C. fraction) and heavier fractions (245 to 380.degree. C. fraction) utilizing a rough flash, and combining the 180 to 245.degree. C. portion of the lighter product with the 245 to 380.degree. C. fraction in desired ratios.

☐ 2. Document ID: US 20030121826 A1

L7: Entry 2 of 5 File: PGPB Jul 3, 2003

PGPUB-DOCUMENT-NUMBER: 20030121826
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20030121826 A1

TITLE: Activated carbon supported cobalt based catalyst for direct conversion of synthesis gas to diesel fuels

PUBLICATION-DATE: July 3, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
Ding, Yunjie	Liaoning		CN	
Ma, Wenping	Liaoning		CN	
Lin, Liwu	Liaoning		CN	

APPL-NO: 10/ 034206 [PALM]
DATE FILED: January 3, 2002

INT-CL: [07] C07 C 27/06, C10 G 11/04, B01 J 21/18

US-CL-PUBLISHED: 208/120.1; 518/714, 502/180
US-CL-CURRENT: 208/120.1; 502/180, 518/714

ABSTRACT:

Diesel fuels or blending stocks having high cetane number are produced from non-shifting Fischer-Tropsch processes, which directly convert carbon monoxide and hydrogen to diesel distillates over activated carbon supported cobalt based Fischer-Tropsch catalysts. The activated carbon supported cobalt based catalysts comprise a substantially high dispersion of at least one of a zirconium component, an cerium component, a ruthenium component or a potassium component in porous carbon and elemental cobalt either deposited thereon or substantially uniformly dispersed therein, wherein the concentration of activated carbon in the catalyst is from about 20 to about 90 percent by weight, based on the weight of the catalyst, the concentration of elemental cobalt in the catalyst is from about 4 to about 50 percent by weight, based on the weight of the catalyst, the total concentration of the zirconium component, the cerium component, or a combination thereof in the catalyst is from about 0.01 to about 20 percent by weight, based on the weight of the catalyst and calculated as the elemental metal or metals, and the total concentration of the ruthenium component, the potassium component, or a combination thereof in the catalyst is from about 0.01 to about 5.0 percent by weight, based on the weight of the catalyst and calculated as the elemental metal or metals. Activated carbon carrier has a surface area in the range of about 200-2000 m.sup.2/g, preferably 800-1500 m.sup.2/g, and a pore volume of 0.3 to 2.0 ml/g, preferably 0.35 to 0.75 ml/g, a distribution of pore diameter of 4 to 1000 .ANG., preferably 5 to 500 .ANG..

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw Desc | Image

☐ 3. Document ID: US 6566568 B1

L7: Entry 3 of 5 File: USPT May 20, 2003

US-PAT-NO: 6566568
DOCUMENT-IDENTIFIER: US 6566568 B1

TITLE: Molecular averaging of light and heavy hydrocarbons

DATE-ISSUED: May 20, 2003

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Chen; Cong-Yan	Kensington	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Chevron U.S.A. Inc.	San Ramon	CA			02

APPL-NO: 10/ 027838 [PALM]
DATE FILED: December 19, 2001

INT-CL: [07] C07 C 6/08

US-CL-ISSUED: 585/310; 585/644, 585/646, 585/647
US-CL-CURRENT: 585/310; 585/644, 585/646, 585/647

FIELD-OF-SEARCH: 585/310, 585/644, 585/646, 585/647

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
3657109	April 1972	Beyaert	
3699035	October 1972	Hughes et al.	
3718576	February 1973	Hughes et al.	
3728410	April 1973	Hughes	
3773845	November 1973	Hughes	
3775505	November 1973	Hughes	
3784622	January 1974	Hughes	
3793251	February 1974	Hughes	
3808285	April 1974	Hughes	
3856876	December 1974	Burnett	
3864417	February 1975	Hughes	
3914330	October 1975	Hughes	
6441263	August 2002	O'Rear et al.	585/650

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
1295926	September 1970	GB	

OTHER PUBLICATIONS

Thomas R. Hughes et al., Molecular Redistribution of Alkanes and Alkylbenzenes, Paper No. 87, pp. 87-1217 through 1228.
Robert L. Burnett et al., Mechanism and Poisoning of the Molecular Redistribution Reaction of Alkanes with a Dual-Functional Catalyst System, Journal of Catalysis, Mar.

28, 1973, pp. 55-64, vol. 31, 1973 Academic Press, Inc.

ART-UNIT: 1764

PRIMARY-EXAMINER: Dang; Thuan D.

ATTY-AGENT-FIRM: Ellinwood; Steven R.

ABSTRACT:

A process for preparing a paraffinic product stream in the gasoline, middle distillate fuel and lube ranges from a C.sub.2-5 -containing feedstock and a C.sub.20 + paraffinic feedstock is described. The combined feedstocks are subjected to molecular averaging via dehydrogenation to form olefins, metathesis of the olefins, and rehydrogenation of the olefins to form paraffins. The product stream includes a fraction rich in paraffins the molecular weights of which are between those of the light and heavy paraffin feedstocks, plus some unconverted feeds. The product of the molecular averaging reaction can optionally be isomerized to improve the octane value, in the case of gasoline, or pour point, in the case of middle distillate fuels and lubes. The unconverted feedstocks can be recycled to extinction.

20 Claims, 3 Drawing figures

☐ 4. Document ID: US 6369286 B1

L7: Entry 4 of 5 File: USPT Apr 9, 2002

US-PAT-NO: 6369286
DOCUMENT-IDENTIFIER: US 6369286 B1

TITLE: Conversion of syngas from Fischer-Tropsch products via olefin metathesis

DATE-ISSUED: April 9, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
O'Rear; Dennis J.	Petaluma	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Chevron U.S.A. Inc.	San Ramon	CA			02

APPL-NO: 09/ 517370 [PALM]
DATE FILED: March 2, 2000

INT-CL: [07] C07 C 6/00

US-CL-ISSUED: 585/644; 585/643, 585/324
US-CL-CURRENT: 585/644; 585/324, 585/643

FIELD-OF-SEARCH: 585/643, 585/644, 585/324, 585/254

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
2405996	August 1946	Burk	208/114
2662090	December 1953	Scharmann	
2686195	August 1954	McAdams et al.	
2735862	February 1956	Buchmann et al.	
2850515	September 1958	Riblett et al.	
3634538	January 1972	Steffgen	585/644
3668268	June 1972	Mulaskey	
3723562	March 1973	Heckelsberg	585/324
3726938	April 1973	Berger	585/314
3763032	October 1973	Banks	208/93
3852207	December 1974	Stangeland et al.	
3856876	December 1974	Burnett	
3904513	September 1975	Fischer et al.	
4013733	March 1977	Rausch	
4039302	August 1977	Khera	
4042614	August 1977	Vannice et al.	
4046715	September 1977	Wilhelm	
4077995	March 1978	Khera	
4088671	May 1978	Kobylinski	
4101593	July 1978	Hayes et al.	
4124649	November 1978	Rausch	
4148833	April 1979	Antos	
4151190	April 1979	Murchison et al.	
4157294	June 1979	Iwao et al.	
4171320	October 1979	Vannice et al.	
4255605	March 1981	Dixon	585/332
4347121	August 1982	Mayer et al.	
4401556	August 1983	Bezman et al.	
4544674	October 1985	Fiato et al.	
4579986	April 1986	Sie	
4810357	March 1989	Chester et al.	
4820402	April 1989	Partridge et al.	
4913799	April 1990	Gortsema et al.	
4920691	May 1990	Fainman	44/389
5059567	October 1991	Linsten et al.	
5073530	December 1991	Bezman et al.	
5096883	March 1992	Mercer et al.	
5114563	May 1992	Lok et al.	
5189012	February 1993	Patel et al.	
5198203	March 1993	Kresge et al.	
5200101	April 1993	Hsu et al.	
5246689	September 1993	Beck et al.	
5334368	August 1994	Beck et al.	
5348982	September 1994	Herbolzheimer et al.	
5898023	April 1999	Francisco et al.	

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
2 050 859	January 1981	GB	

OTHER PUBLICATIONS

Amelse, J., et al., Journal of Catalysis, "Iron Alloy Fisher-Tropsch Catalysts", 72: pp. 95-110 (1981) Academic Press, New York.
Atterer, M., et al., Gmelins Handbuch der Anorganische Chemie 8. Auflage, 59. (1959) Verlag Chemie, GmbH, Germany.
ASTM D 975-98b, "Standard Specifications for Diesel Fuel Oils", (2000) ASTM, West Conshohocken, PA.
ASTM D 1655-99a, "Standard Specification for Aviation Turbine Fuels," (2000) ASTM, West Conshohocken, PA.
Beck, J., et al., J. American Chemical Society, "A New Family of Mesoporous Molecular Sieves Prepared with Liquid Crystal Templates", 114, No. 27: pp. 10834-10843 (1992) American Chemical Society, Washington, D.C.
Courty, P. and Delmon, B., "C.R. Acad. Sc. Paris," p. 268 (May 28, 1969) Centre National de la Recherche Scientifique, Paris.
Deckwer, W. and Serpemen, Y., Ind. Eng. Chem. Process Des. Dev., "Modeling the Fischer-Tropsch Synthesis in the Slurry Phase," 21: No. 2, pp. 231-241 (1982) American Chemical Society, Washington, D.C.
Hepp, H., et al., Ind. Eng. Chem., "Ultilization of Kerosene Stocks for Jet Fuels by Treatment with Urea," 45: 112 (1953) American Chemical Society, Washington, D.C.
Hu, Y., Hydrocarbon Processing, "Unconventional olefin processes", May 1983, pp. 89-96.
Khan, M., et al., AICHE 1981 Summer National Meeting No. 408, "The Synthesis of Light Hydrocarbons from CO & H2 Mixtures over Selected Metal Catalysts", ACS 173rd Symposium, Fuel Div., New Orleans, Mar. 1977, American Chemical Society, Washington, D.C.
Kitzelmann, D., et al., Chem. Ing. Tech, "Zur selektiven Hydrierung von Kohlenmonoxid zu C2-bis C4-Olefinen", 49 (1977) No. 6, pp. 463-468, Verlag Chemie, Weinheim.
Kolbel, H. and Ralek, M., Catal. Rev.-Sci. Eng., "The Fischer-Tropsch Synthesis in the Liquid Phase", 21: pp. 225-274 (1980) Marcel Dekker, Inc., New York.
Kresge, C., et al., Nature, "Ordered mesoporous molecular sieves synthesized by a liquid-crystal template mechanism", 359: 710-712. (1992).
Lo, C., et al., "Mossbauer and Magnetic Studies of Bifunctional Medium-Pore Zeolite-Iron Catalysts Used in Synthesis Gas Conversion," pp. 573-588. (1981) American Chemical Society, Washington, D.C.
Nakamura, M., et al., Stud. Surf. Sci. Catal. 7, Pt/A, pp. 432-446 (1981).
Ramachandran, et al., "Bubble Column Slurry Reactor, Three-Phase Catalytic Reactors", Chapter 10, pp. 308-332. (1983) Gordon and Broch Science Publishers, New York.
Shah, Y., et al., AIChE Journal, "Design Parameters Estimations for Bubble Column Reactors", 28:, No. 3, pp. 353-379 (May 1982) The American Institute of Chemical Engineers.
Schulz, R., et al., Second World Conference on Detergents, Montreaux, Switzerland (Oct. 1986) American Oil Chemists' Society, USA.
Stanfield, R. and Delgass, W., Journal of Catalysis, "Mossbauer Spectroscopy of Supported Fe-Cu Alloy Catalysts for Fischer-Tropsch Synthesis", 72: pp. 37-50 (1981) Academic Press, Inc., New York.
Van der Woude, F. and Sawatzky, G., Physics Reports, Mossbauer Effect in Iron and Dilute Iron Based Alloys (Section C of Physics Letters) 12 No. 5, pp. 335-374 (1974) North-Holland Publishing, Amsterdam.
Vora, B., et al, Chemistry and Industry, "Production of Detergent Olefins and Linear Alkylbenzenes," pp. 187-191 (1990) Society of Chemical Industry, London.

ART-UNIT: 1764

PRIMARY-EXAMINER: Griffin; Walter D.

ATTY-AGENT-FIRM: Burns, Doane, Swecker & Mathis, LLP.

ABSTRACT:

A process for preparing distillate fuel compositions from a C.sub.2-6 olefinic

fraction and a C.sub.20 + fraction via molecular averaging is described. The fractions can be obtained, for example, from Fischer-Tropsch reactions, and/or obtained from the distillation or other processing of crude oil. Molecular averaging converts the fractions to a product that includes a significant fraction in the C.sub.5-20 range that can be used for preparing a distillate fuel composition. The product is preferably isomerized to increase the octane value and lower the pour, cloud and smoke point. The product can also be hydrotreated and/or blended with suitable additives for use as a distillate fuel composition.

24 Claims, 1 Drawing figures

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TITLE: Converting synthesis gas to hydrocarbons with high diesel distillates content through Fischer-Tropsch process used as, e.g. diesel fuel heavier than gasoline, involves employing activated carbon supported cobalt-based catalyst

INVENTOR: DING, Y; LIN, L ; LU, Y ; MA, W

PRIORITY-DATA: 2002US-0052485 (January 17, 2002)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 20030134912 A1	July 17, 2003		008	B01J008/04

INT-CL (IPC): B01 J 8/04; C07 C 27/06

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